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ABSTRACT

The objective of this research paper is to present evidence showing that sex differences in aggression are universal, but that within limits the differences are also highly susceptible to experiential modification. Aggression is defined as any behavior that intends to hurt a person or a thing, physically or verbally. Investigation was conducted within the framework of three independent methodologies: (1) holocultural research of enculturation, (2) cross-cultural community research of sexual division of labor, and (3) psychological research of phylogenetics within the United States. Children were examined in each component of the research to show aggression-level differences between males and females. The first methodology shows that sex differences in aggression result from enculturative pressures that differentially encourage greater aggressive behavior in boys than girls. The second research component finds that sex differences in the division of labor produce sex differences in aggression. The third method shows that sex differences in aggression result from a phylogenetically acquired species predisposition for males to behave more aggressively than females, subject to modification by experience and culture learning. Generally, the three theoretically competing methodologies show that males are more aggressive than females on a panspecies level. Research notes and data tables are included in the document. (Author/ND)

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A Worldwide Study of Sex Differences in Aggression: A Universalist Perspective

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Two opposing views regarding human aggression are held widely in America.[1] One view states that human behavior including aggression--like the human body--is the result of several million years of biological evolution. Supporters of this position point out that contemporary man carries with him behavioral predispositions acquired through the course of hominid evolution. One especially vocal subgroup of professionals such as Lorenz (1966), Morris (1967), and Ardrey (1961, 1966, 1970) claims that since behavioral and emotional responses such as aggression are the result of this long biological heritage, they are now an irrevocable part of man's nature. Human aggression for these biological determinists is viewed as innate and unalterable. This is what I call the "instinctivist perspective."

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Social learning theorists, many anthropologists, and certain other behavioral scientists sharply criticize the instinctivist view. These scholars point out that man's behavior is so modified by experience that it is nonsense to postulate ancient hominid instincts (see Scott 1958; Moyer 1968; Montagu 1973). For these critics, especially for some cultural anthropologists, human behavior is almost entirely a matter of learning, especially culture learning. I call this the "enculturation perspective." This

perspective highlights the fact that a great part of normal behavior the world over results from individuals' learning the culturally prescribed and valued behavior-standards of their own social groups.

A third and mediating view has emerged within behavioral science, a position I call the "phylogenetic perspective" (Rohner 1975). As is true of the instinctivist position, the phylogenetic perspective recognizes that human behavior is the product of evolutionary processes in the same way that human morphology is. But unlike many instinctivists, scholars employing the phylogenetic perspective also acknowledge the profound influence of experience, including learning--especially culture learning or enculturation. A major dictum of the phylogenetic perspective is that, within limits, man's genetic predispositions are plastic, or subject to modification through experience. That is, the way genetically encoded behavioral predispositions are revealed within an individual is a function of his biosocial experience in interaction with his genetic endowment (see Ginsburg and Maxson 1974). An individual's genotype affects the kinds of experiences he is capable of having, but an individual's experience in turn, influences the time as well as the form of appearance of his biological potentialities. Resulting from this interaction we find great worldwide variations in behavior while at the same time we find commonalities in man's behavior, including certain behavioral universals, and perhaps a few invariants or constants.[2]

Unlike the instinctivists, who argue that aggression is innate, immutable and inevitable, the objective of this paper is to present

evidence showing that sex differences in aggression are indeed universal, but that within limits the differences are also highly susceptible to experiential modification.

Aggression is defined here as any behavior that intends to hurt a person or a thing. Aggression is revealed physically by such behaviors as fighting, hitting, biting, kicking, pushing, pinching, and scratching. It is revealed verbally in such forms as bickering, quarreling, telling someone off, sarcasm, making fun of someone, criticizing him, humiliating him, cursing him, or saying thoughtless, unkind or cruel things.[3]

METHODOLOGIES EMPLOYED

I turn now to a discussion of the methodologies used in this worldwide study of sex differences in aggression. I should make it clear at the outset that my thinking is guided by the logic of the "universalist approach." Since this approach is not yet widely known it seems appropriate to expand somewhat on its nature.

The phrase "universalist approach" refers to an orientation toward behavioral science that has as its objective the establishment of scientifically derived generalizations about human behavior, generalizations that are species-wide in their applicability. Conceptually, and at the highest level of abstraction, the universalist approach asks the philosophically based question, "What does it mean to be a human being?" That is, the universalist approach asks about the nature of human nature, or more specifically, about researchable (i.e., operationalizable) features of "human nature." From this point of view then it should be clear

that the universalist approach is not concerned simply with the behavior of middle income White Americans, Black Americans, Kwakiutl Indians or Turkish peasants--or even with a comparison between any two or more of these groupings, but rather with mankind as a whole. The emphasis on universals does not mean that the universalist approach disregards significant cognitive, emotional or other behavioral differences among human populations, however. Indeed an interest in the variability of human behavior is but the complement of the search for universals. For example, the thought processes of young children may prove to be qualitatively different in some respects from cognitive processes of adults, but the cognitive functioning of children at a certain age may turn out to be more or less invariant throughout our species.

Methodologically the universalist approach does not dictate any given procedure or class of research techniques. Indeed quite different methods are appropriate for asking different kinds of questions. The universalist approach does presume, however, the presence of at least the minimum standards of scientific inquiry. That is, the generalizations that are to be elevated to the level of universalist principles must be able to withstand scientific scrutiny: they must be supported by empirical evidence collected in an inter-subjective (i.e., objective) and impersonal manner, and the procedures used must be open to public review and replication, thereby assuring that the purported principles are capable of verification or falsification by independent investigators. In addition investigators must employ only variables and procedures

That are transculturally equivalent, that is, employ concepts and procedures that have equivalent meaning in the cultural groups being studied. The use of transculturally equivalent variables and methods provides assurance that the variables can be measured directly by the same procedures in different societies, and that the measurements themselves can be compared (see Sears 1961; Brislin et al 1973:13-14, 24-29). These are but minimal requirements needed to distinguish appealing but nonetheless speculative species-wide generalizations from scientifically derived generalizations.

One additional point regarding the methodological and conceptual mix comprising the universalist approach is the need for cross-cultural comparative research. That is, insofar as behavioral scientists are interested in establishing valid species-wide generalizations about man, then their research design must consider relevant variations found throughout our species, or perhaps simply discover if any variation exists with respect to the behavior in question. In either case serious universalist investigators

employ an adequate worldwide sampling design in their research. The rationale here is that if behavioral scientists want to be confident in the species-wide generalizability of their principles they are obligated to show that the principles can indeed be generalized beyond the single population or cognate populations from which they were originally derived or discovered. This point has been repeated emphatically on numerous occasions in both anthropology and in cross-cultural psychology (see for example Brislin et al. 1973:143-4; Dawson 1971:291; Devos and

Hippler 1969:324; Jahoda 1970:2-3, 1974).

So far I have said that successful universalist efforts must be generalizing in intent, conform to the minimum standards of science, deal with transculturally equivalent variables and procedures, and at some point test their principal hypotheses in an adequate pancultural sample. In addition, researchers should also recognize that every general "methodology" as well as every specific research procedure (or simply "method") has certain strengths and weaknesses; each gives certain kinds of information and not others, and each has the potential built into it for systematic error or bias. By the term "methodology" I refer here to distinguishable classes, traditons, or paradigms of research, each with its own natural history, employing a somewhat different logic and different basic assumptions--i.e., epistomology--and each comprising one or more discrete procedures. In this sense then, the cross-cultural survey method described in a moment is a methodology. That is, it is a class of research that has a different logic, requires different assumptions about the world, and commits the researcher to different concrete procedures from, for example, the experimental methodology used so often in psychology, or from anthropological fieldwork. The term "method", on the other hand--as I use the construct--refers to discrete research procedures such as questionnaires, interviews, or behavior observations.

Since every method as well as methodology has certain forms of error potentially built into it, it is possible for research results to reflect this method bias rather than to be a true measure

of the behavior we wish to know about.

To avoid the possibility of interpreting this "method bias" as being a true measure of the behavior under question, serious universalist researchers triangulate their results whenever possible by employing a multimethod research strategy. That is, they employ two or preferably three discrete measures (i.e., methods), or even better two or three independent methodologies in order to determine the extent to which the same conclusions emerge when multiple and independent measurement processes are used--none of which shares the same weaknesses or potential for bias (see Webb et al. 1966:3). One's confidence is increased insofar as he gets converging results from the use of different tests, especially when these tests are performed within the framework of separate methodologies.

In addition to calling for a multimethod research format, the universalist approach also generally assumes the probability model of behavior, rather than a mechanical model, where a single exception to one's hypotheses or theory is sufficient evidence to discredit that theory. Practitioners of the universalist paradigm--including my own work--generally assume as a matter of course that exceptions to their theory will occur. Generally, the best that scientists of human behavior can hope for is that their theories will lead them to make predictions with tolerably few exceptions. The probability model is largely a matter of statistics and of the probability of certain events happening in a population under specified conditions. The mechanical model,

on the other hand, assumes that behavior is strictly "ruleful;" that is, if we can discover the rules, we can make predictions with perfect fidelity. Much of the research in linguistics and in allied fields using the linguistic model comes close in contemporary universalist research to this "mechanical model" orientation. Most other behavioral scientists search for statistically signficiant regularities in behavior rather than for exceptionless uniformities.

To summarize, so far, the universalist approach has as its objective the establishment of worldwide generalizations about human behavior. In addition, even though no specific methodology is required, the universalist approach does assume that at least the minimum standards of science will be followed, transculturally equivalent variables and procedures will be used, and an adequate pancultural sampling design will be employed. Moreover, the universalist approach calls, when feasible, for a multimethod research format, and the approach typically assumes a probability model of behavior. I might also note that the universalist approach often recruits investigators into interdisciplinary research--especially research that lies on the interface of psychology and anthropology.

All these methodological and conceptual guidelines are incorporated into the research design directing the work of today's presentation on the question of worldwide sex differences in aggression.

Specifically, I employed a research strategy that incorpo-

rates three distinct traditions of research or methodological components, namely, the cross-cultural survey (or holocultural) component, the intracultural community study component, and the psychological research component. Figure 1 [display Figure 1] shows that the methodologies used in this research produce overlapping results. It is in the hatched area of the Venn diagram, where all three methodologies converge, that the results have successfully survived the onslaught of the multimethod research strategy, and it is in this area where the universalist or species-wide principles are to be found.

I want to explain briefly the advantages and disadvantages of each of the three methodological components used in this research before moving on to a discussion of the results. The holocultural method employs a sample of 101 communities from around the world representing a stratified sample of the world's known and adequately described cultural systems. Ethnographies form the data base for holocultural research. ("Ethnography" refers to the written description by anthropologists and others of the "typical" behavior of some cultural group in the world.) The holocultural method thus measures regularities in standardized or customary behavior within total communities the world over. For this reason the method is outstanding for distinguishing culturally conditioned or culture-bound relationships from universal causal/functional relationships, but it provides no information about individual variability in behavior.

The second component of this research, the psychological

research component, involves work in the United States on sex differences in aggression among children and adults. As part of this component today I will also include a very brief review of the evidence regarding the physiological basis for sex differences in aggression in animals.

Psychological research complements holocultural research in that the former deals with inter-individual variability whereas holocultural research deals with inter-cultural variability. It is often possible to experimentally manipulate and control psychological variables withn the United States in ways that cannot be done in cross-cultural research. The cross-cultural survey method is nonetheless indispensible because, among other things, it lets investigators measure the extent to which psychological research done in the United States can be generalized to all human populations. By itself, research within America cannot distinguish culturally dependent (or culture-bound) from species-wide psychosocial dispositions. As a result, many cross-cultural psychologists and anthropologists have raised serious question about the pancultural generalizability of a good portion of psychological research (see DeVos and Hippler 1969:324, Jahoda 1970:2).

Intracultural community studies form the third part of our work on sex differences in aggression. This component involves long-term anthropological and psychological field investigations of communities within the United States but especially in culture areas outside North America. The general cultural setting is

studied within each community and a personality assessment is made of a sample of children and adults. Community studies provide invaluable information about the influence of natural (e.g., cultural, climatic, etc.) settings on behavior and personality development. The community study methodology also provides the opportunity to systematically vary cultural and other social, psychological, and environmental conditions while simultaneously allowing for the measurement of individual variability as well as behavioral uniformities within each community. This component, like the psychological research component, employs an interdisciplinary and multimethod research strategy. But unlike the other two methodologies, the community study component concentrates on within-community consistencies and variability in behavior. That is, in every community some persons are more aggressive, for example, than others, even though the general cultural norm may tend toward very low aggression. Similar variation in other relevant forms of behavior are also found within all communities.

The community study component and aspects of the psychological research component provide the opportunity to study in situ many of the relationships found in holocultural research. This technique of subsystem replication (i.e., testing within a single cultural system the results reached in cross-cultural surveys) contributes to the assessment of the validity as well as the panhuman generalizability of results coming from the other two methodologies. One's confidence in the veracity and worldwide generalizability of his conclusions is increased insofar as he gets converging results from the use of such independent tests

as these, especially when these tests are performed within the framework of discrete methodologies, and when at least one of the methodologies incorporates an adequate worldwide sampling design.

RESULTS AND CONCLUSIONS

Cross-Cultural Survey (Holocultural) Component

I turn now to a discussion of the results of this work. First, I want to consider the holocultural component. As I indicated earlier, data in the holocultural component were derived from a sample of 101 societies already described by anthropologists. Sex differences in aggression were coded on a five-point scale by two independent coders for each society.[4] After the raters conferred to reconcile discrepancies in codes to a maximum of one code-point difference, the codes for the two raters were summed, creating a nine-point scale ranging from two through ten where a code of two revealed little aggression and a code of ten indicated considerable aggression. All subsequent statistical tests were based on this nine-point scale.

When viewed one society at a time, holocultural data show substantial worldwide sex-linked variations in aggression. That is, in some societies children--and adults--of both sexes are aggressive but in other societies this disposition toward aggression is less intense.[5] In our worldwide sample, for example, children's aggression scores ranged from a low of three to a high of twelve. The single score of twelve fell as an exception off the normal coding scale of two through ten. These measures of aggression relate to children from the ages of two through six,

or for as long before two or after six as the parent-child relationship remains constant. Two illustrations of aggression--one intense, the other hardly noticeable--may help clarify the nature of these cross-cultural codes. Colombian Mestizo children in the South American village of Aritama are sharply aggressive (see codes in Table 1). As described by the Reichel-Dolmatoffs (Reichel-Dolmatoff and Reichel-Dolmatoff 1961:97-98), "The temper tantrums of the first year continue in more and more violent form, up to the seventh year at least. Children...roll on the floor, beat their heads against the wall, and may even break their teeth while doing so. Very often they beat their fists against their chest and head, tear out their hair, or twist their ears. Sometimes they will bite the floor or a stone, filling their mouths with earth or ashes. As soon as children have learned to speak, they scream threats against their mother, which become increasingly verbose and insulting as the child acquires a wider vocabulary. When touched, they will beat wildly about them." The behavior of Chenchu children in India contrasts starkly with that of the Colombian Mestizo. As Fürer-Haimendorf (Fürer-Haimendorf 1943:2) writes, "Among themselves Chenchu children are extraordinarily good natured. Although sometimes boisterous and high spirited, they never seem to quarrel. In all the six weeks we lived in the village, I saw not a single instance of bad temper or open discord among the children, and this in spite of the changing composition of the pal groups."

Analysis of the holocultural data show that within any given society the level of aggressive behavior displayed by

children of one sex varies directly with the level of aggression among children of the other (r = .88; $p < .01$, N = 14). Taken in conjunction with data presented later, this fact seems to reveal the influence of experience, especially enculturative pressures shared by children within individual social systems around the world.

Two principal conclusions emerge from these data so far: (1) even though cross-cultural variations in children's aggression is substantial, (2) within-cultural sex differences in children's aggression is usually slight. These facts notwithstanding, it is also true that young boys the world over tend to be somewhat more aggressive than the same aged girls (t_d = 4.22, $p < .001$). That is, within 71% of the societies (n = 10) where it was possible to measure sex differences in children's aggression, boys from the ages of two through six were, as a group, significantly more aggressive than girls. In no case were girls within any cultural system more aggressive than boys. Stated another way, within any single society boys tend to be at least slightly more aggressive than girls, even though from the perspective of the great worldwide range of variation in aggression, boys and girls within any given society tend to fall close together on the cross-cultural scale of aggression. Sex differences in aggression are often slight or subtle, but they seem to be consistent throughout our species, at least for children.

Table 1 [Display Table 1] elucidates in simplified and hypothetical form these worldwide sex differences in aggression.

The table shows that boys and girls within any single society are about the same level of aggression--in comparison to children in other societies. This fact produces a significant worldwide correlation between boys' and girls' aggression. But within any given society it is also true that boys are more aggressive than girls (by one scale point, in this ideal-prototypical model), producing a significant worldwide mean difference in aggression between boys and girls.

Table 2 [Display Table 2] presents a listing of the societies coded in our research where young boys are more aggressive than young girls (N = 10), and where the sexes are equally aggressive (N = 4). In no society were girls normally more aggressive than boys.

These data regarding sex differences in aggression are supported by Barry et al. (1975) who measured aggression in two time periods. In a sample of 125 societies Barry and his collaborators found that young boys from about four through six years of age are, as a group, more aggressive than the same aged girls ($p < .01$), and in a sample of 137 societies these investigators found that older boys from about eight years to approximately adolescence are also more aggressive than the girls in the same age range ($p < .01$).[6] In the context of the phylogenetic perspective described at the beginning of the paper, these sex differences in aggression become more meaningful when one recognizes that in only 20% of the societies ($n = 25$) coded by Barry and associates were young boys encouraged to be more aggressive than young girls, and in only

25% of the societies (n = 34) were the older boys encouraged to be more aggressive than the same aged girls (Barry 1975).[7] Thus, worldwide sex differences in aggression do not appear to result from boys experiencing greater socialization pressures for aggression.

The picture is less clear regarding adult aggression, but this is true probably because less holocultural data are available for the years of maturity. As is true for children, adults the world over display a moderate amount of aggression, and as is also true for children, female aggression from society to society tends to vary directly with male aggression.[8] That is, insofar as males are aggressive within a society, females also tend to be aggressive (r = .88, p < .01, n = 31). But unlike children, adult males around the world are not, as a group, significantly more aggressive than adult females (t_d = .84, p = n.s.).

Comparing Table 2 with Table 3 [Display Table 3] one sees that the greater aggression of males in childhood disappears in adulthood, where both sexes tend in the majority of societies (i.e., in 65% of the sample societies) to be equally aggressive. This shift in aggression as an individual matures probably reflects continuing enculturation and other experiential factors. Men curb their aggression slightly, as evidenced by a mean shift in worldwide aggression scores from 7.90 in childhood to 7.26 in adulthood. Women as a group become slightly more aggressive, going from a worldwide mean of 6.70 in childhood to 7.10 in adulthood. Neither mean sex difference is statistically significant, however (males: t_d = 1.07, p = n.s.; females: t_d = -.17, p = n.s.).

Four main conclusions emerge to far from these results. (1) Both children and adults the world over display a fair amount of aggressive behavior. (2) Within any given society the level of aggression among the members of one sex tends to vary directly with the level of aggression among members of the other, but (3) boys tend on the average to be somewhat more aggressive than girls, although (4) adult males are not significantly more aggressive as a group than adult females. It is possible, however, that men and women tend to express aggression in different ways. More work must be done before any conclusion can be drawn about differences in the expression of aggression.

Cross-Cultural Community Study Component

I turn now to a discussion of the data in the second methodological component to this work, namely, the cross-cultural community study component. Many ethnographic accounts report sex differences in aggression. For example, Spiro (1958:247-48) reported that three and four-year-old Kibbutzim boys in Israel were more aggressive than girls. Whiting and Edwards (1973) reported that, on the whole, three- to eleven-year-old boys were more aggressive than girls in all six societies studied in the Whitings' Six Cultures Project, namely, in Kenya, Okinawa, India, the Philippines, Mexico, and in New England. The same conclusion was reached by Edwards (Whiting and Edwards 1973) about the two- to ten-year-old children studied by her in a Kenyan village.

In this section I concentrate principally on a single community study by Ember (1973) in East Africa. This study shows

clearly how the phylogenetic process works. Ember worked in a Luo community in Kenya where the sexual dividion of labor is clearcut. Certain chores such as digging root crops, cooking, serving food, cleaning house, and tending babies are uniformly regarded as "feminine" tasks. In some households, however, mothers did not have older daughters to help with these domestic chores so the tasks were assigned to boys. In this way Ember was provided with a natural experiment where she could assess the relative influence of feminine task assignment on the social behavior of children from the ages of 7 1/2 to 16 years. An F test for linear regression supported the hypothesis that boys who do "feminine" work--especially feminine work within the home--are intermediate in aggression between girls, all of whom do feminine work, and boys who do "masculine" work ($p < .01$). That is, boys as a group in this Luo community, regardless of task assignment, were more aggressive than girls ($p < .01$). However, boys who did feminine tasks within the home were less aggressive than boys who did masculine chores, though still more aggressive than the girls. These results seem to support the conclusion that males have a greater constitutional readiness than females to behave aggressively, but that aggression is subject in both sexes to substantial social control.

Psychological Research Within the U. S. A.

The conclusion that males are more disposed than females toward aggression receives additional support from the psychological research component mainly in the United States. About 130 studies have been reported from the 1930's through 1975 on

sex differences in aggression. During this time investigators have looked at sex differences in aggression throughout a large part of the life span from early childhood to old age. Aggression has been examined in many different natural and experimental settings, and a variety of methods have been used to explore sex differences. The major research designs used in these studies, for example, have been observational studies, rating studies, experimental studies, the use of projective tests, self reports, and studies of fantasy aggression in doll play. A single overwhelming conclusion emerges from these 130 studies: American males--men as well as boys--tend to be more aggressive than females. Seventy-one percent of all studies of children (total $\underline{n}$ = 83) show boys being more aggressive than girls; only 6% (i.e., 5 studies) conclude that girls are more aggressive. The remaining 23% (i.e., 19 studies) found no sex differences at all. The conclusion that American boys are somewhat more aggressive than girls becomes more compelling in view of the fact that the same conclusion emerges regardless of the research design used. Thus, the generalization that boys are more aggressive than girls cannot be interpreted as an artifact of the methodology employed.

Similarly, the majority (i.e., 57%) of studies on sex differences among adults (total $\underline{n}$ = 46) converge on the result that adult males in America are somewhat more aggressive than American women. As recorded in Table 4 [Display Table 4] however, the percentage of studies showing no sex differences in adult aggression increases in relation to the comparable percentage found among children. That is, 37% of the studies (i.e., 17 studies)

among adults found no differences between the sexes, but only 23% of the childhood studies failed to identify a sex difference. These results are fairly consistent across methodologies (see Table 4). The results regarding sex differences in adulthood also seem to be consistent with the cross-cultural data reported earlier which show that sex differences are not as great in adulthood as in childhood.

Biological Bases of Sex Differences in Aggression

All sources or evidence reviewed so far point to the conclusion that throughout our species, males--certainly boys, but perhaps also men--are somewhat more aggressive than females. The question left unanswered is, why? Is there a true constitutional difference between males and females in relative predisposition toward aggression? If so, what is the basis for the difference?

I cannot explore these questions in detail, but a brief summary of the sex differences in aggressive behavior among animals reveals sexual dimorphism--in terms of aggressive behavior--among many species.[9] Males are generally more aggressive than females.[10] Male-females differences in within-species aggression may reflect sexual dimorphism in brain mechanisms--mechanisms associated with aggressive behavior--which are established early in life as the result of stimulation by testicular androgens in males and by the absence of these secretions in females. The presence of circulating androgen in neonatal males during early development is associated with increased aggression in adult males. That is, for example, normal males of most mammalian species have a surge of androgen secreted from the testes at birth and again

at puberty; females do not. Associated with this pubertal surge is an increase in aggressive behavior, and without both the early and the later androgen surges, male-female aggression is often indistinguishable, at least among rodents, for which the greatest research evidence is available. Even though androgen does not cause aggression directly, it is clear that the presence of androgen is associated with aggressive behavior in numerous species.

Discussion

I want to turn now to a general discussion and conclusions from these data. The question about worldwide sex differences in aggression has been investigated here within the framework of three independent methodologies or traditions of research, viz., holocultural research, cross-cultural community research, and psychological research within the United States. Moreover, a variety of discrete methods has been employed by independent investigators in the naturalistic and experimental studies conducted in America. As I noted earlier, each of these discrete methods and general classes of research or methodologies has certain weaknesses as well as strengths. Each gives certain kinds of information but not others, and most importantly, each has the potential for certain kinds of bias. If a proposition survives the onslaught of two or more of these independent but imperfect methods and methodologies then one can be reasonably confident in his results. This "trianguiation of methodologies" approach thus becomes a compelling source of evidence.

The proposition studied here about sex differences in aggression has withstood the rigors of many different methods and

independent methodologies, one of which employed a worldwide sampling design. For this reason it seems that the assertion sometimes voiced in the United States (see for example, Maccoby and Jacklin 1975; Mischel 1970:4-5; Bardwick 1971) that males are more aggressive than females can now be raised to the level of a panspecies generalization, at least for children.

Three competing hypotheses explain this generalization. Two of these hypotheses explain sex differences in aggression solely on the basis of learning. They are designated "enculturation" hypotheses. The first enculturation hypothesis states that sex differences in aggression result from enculturative pressures differentially encouraging greater aggressive behavior in boys than girls. This "differential socialization pressure" hypothesis is less plausible than the other two in view of the data reported earlier by Barry et al. (1975) who found that in about 75% of their world sample, boys and girls are encouraged or allowed equally to be aggressive. Thus parents around the world do not seem to put different pressures on their boys and girls to be aggressive or nonaggressive.

The second enculturation hypothesis, the "sexual division of labor" hypothesis, states that sex differences in the division of labor produce sex differences in aggression (see D'Andrade 1966:178-180; Whiting and Edwards 1973:171). This hypothesis is less clearly criticized than the differential socialization pressure hypothesis except by pointing to the fact already noted that Ember (1973) found boys who were assigned the same domestic tasks as girls were still more aggressive than

girls, even though these boys were less aggressive than boys who did more "masculine" chores. The sexual division of labor hypothesis has at least one other shortcoming. If the observed worldwide sex differences in aggression are based solely on learning as postulated by this hypothesis then one must explain, insofar as it is true, why boys around the world are assigned tasks that lead to greater aggression than girls. What biosocial mechanism produces this ostensible universal?

The third rival hypothesis, the phylogenetic hypothesis, states that sex differences in aggression result from a phylogenetically acquired, species predisposition for males to behave somewhat more aggressively than females. But this differential in readiness to respond aggressively is subject to substantial modification through experience, including importantly the kind of experience called culture learning. Thus, the phylogenetic perspective postulates an interaction between an individual's genotype and his experience. Each affects the other. It is not possible in this paper to provide a definitive test of any of these competing hypotheses, but the weight of the evidence seems to favor the phylogenetic hypothesis, partly because of a source of information missing from both enculturation hypotheses. That is, neurophysiological and endocrinological data on non-human mammals--including primates (see for example, Ross, Holaday and Berstein 1971)--shows a clear connection between among other things, aggression and circulating levels of plasma testoterone. I know of no comparable biological data supporting either enculturation hypothesis.

The plausibility of an hypothesis increases insofar as the major rival hypotheses have deficiencies not shared by the central hypothesis. In this instance both enculturation hypotheses have evidence against them, as already noted, and both leave critical theoretical questions unresolved. For example, the sexual division of labor hypothesis opens a question about why boys should be more likely than girls to be assigned tasks leading to aggression. This mystery disappears if one postulates that activities which may be associated with aggression, such as hunting, are generally assigned to boys because of their somewhat greater constitutional readiness than girls to be aggressive. In this way the worldwide variation in task-assignment becomes another adaptive feature of man's psycho-social existence.

NOTES

1. Invited Address presented at the Eastern Psychological Association annual meeting. New York City, April 23, 1976. An abbreviated version of this paper is in press. It will appear in Ethos during the spring or summer of 1976.

I thank the staff and facilities at the Boys Town Center for the Study of Youth Development at Catholic University for their help in preparing this manuscript. The paper benefits from a critical reading by Evelyn C. Rohner.

2. Universals refer to regularities or uniformities of human behavior, but these regularities are seldom exceptionless. They are simply highly probable under specified conditions. The concepts "universals," "phylogenetic perspective," and "enculturation perspective" are amplified in Rohner (1975).

3. Assertiveness is sometimes confused erroneously with aggression. Assertiveness refers to an individual's attempts to place himself in physical, verbal, or social priority over others, for example, to dominate a conversation or a group's activities, or to insist upon or stress one's will over that of others. An individual may be assertive verbally, physically, or both. Forms of verbal assertiveness include making confident, declarative statements, sometimes without regard for evidence or proof, or pushing forward one's own point of view. Physical assertiveness includes various forms of offensive physical action. But when this offensive action

(either physical or verbal) has the intention of hurting someone or something, then it becomes aggression, not assertiveness. Thus aggression and assertiveness are often closely related forms of behavior, a major distinction being the intentionality of hurting. Aggression implies such an intention. Assertiveness does not.

4. See Rohner (1975) for a detailed discussion of the coding procedures, code characteristics, and methodological characteristics of the sample of 101 societies on which most of the research in this section is based.

5. In most societies, however, children display a fair degree of aggression. Measured on a nine-point scale from two through ten--where two equals low aggression and ten equals high aggression--the mean aggression score for boys ages two through six in our sample is 7.9; the mean aggression score for the same aged girls is 6.7. These data are based on 14 societies where aggressive behavior could be measured for both boys and girls.

6. Coding in both samples was done on an eleven-point scale ranging from 0 (= enculturative pressures to be nonaggressive) to 10 (= strong enculturative pressures to be aggressive). It is worth noting that no society in the sample was coded 0 or 1, meaning that in all human societies, as estimated by this world sample, children are encouraged to behave aggressively, or at least their aggressive behavior is condoned implicitly and to a minor degree.

7. Barry (personal communication) cited the following figures regarding aggressive behavior inculcated by parents in young and older children.

	Boys encouraged to be more aggressive than girls		No sex difference in aggression enculturation.		Girls encouraged to be more aggressive than boys	
	N	%	N	%	N	%
Early childhood	25	20	97	78	3	2
Later childhood	34	25	99	72	4	3

8. As was true of children, adult aggression was coded on a nine-point scale from two through ten, where two equals low aggression and ten equals high aggression.
9. Information in this section was provided by Evelyn C. Rohner (1975, and personal communication). Her literature review pertains principally to sex differences among laboratory mice and rats. These are the animals for which the greatest experimental data are now available.
10. Animal males are not invariably more aggressive than females, however. Female hamsters, for example, attack and defeat males. Gerbil males and females are equally aggressive.

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TABLE 1

Ideal-Prototypical Model in Phylogenetic Perspective of Worldwide Sex Differences in Aggression

Society	Sex Differences in Aggression	
	Girls[a]	Boys[a]
A	1	2
B	3	4
C	5	6
D	7	8
.	.	.
.	.	.
.	.	.
N	9	10
	$\bar{X} = 5$	$\bar{X} = 6$

[a] t_D was performed on this theoretical frequency distribution $p < .000$, $r = 1.00$

Table 2

Worldwide Sex Differences in Aggression: Children Ages 2 through 6

	Boys($\bar{X}$ =7.9)	Girls[a]($\bar{X}$ = 6.7)
Boys more Aggressive than Girls (N = 10)		
Colombian Mestizo	12	10
Chamorros	10	9
Paiute	10	8
Wogeo	10	8
Japanese	9	7
Navaho	8	7
Arab Sudanese	8	(4)
Potawatomi	7	6
Manus	7	5
Americans	4	3
Girls more Aggressive than Boys (N = 0)		
Sexes Equally Aggressive (N = 4)		
Woleaians	10	10
Sioux	8	8
Araucanians	5	5
Malekula	4	4

[a] The number in parentheses indicates a qualified, ambiguous, or doubtful code.

Table 3

Worldwide Sex Differences in Aggression: Adults

	Males[a] ($\bar{X}$ = 7.26)	Females[a] ($\bar{X}$ = 7.10)
Males More Aggressive (N = 6)		
Colombian Mestizo	11	10
Akwe-Shavante	10	9
Tanala	9p	(7)
Arab Sudanese	(8)	(4)
Araucanians	5	4
Eskimo, Alaskan	5	3
Sexes Equally Aggressive (N = 20)		
Eskimo, Greenland	10	10
Indians (High cast Hindu)	10	10
Tukuna	10	10
Alorese	9	9
Indiana	9	9
Apache, Chiracahua	(8)	(8)
Bechuana	8	8
Chamorros	8p	8p
Chukchee	8	8
Manus	8	8
Tepoztecans	8p	8p
Ilocos	(7)	(7)
Kwakiutl	7	7
Paraguayans	7	7
Siriono	7	7
Anadamanese	6	6
Greeks, Modern	(6)	(6)
Carriacou	4	4
Japanese	4	4
Fijians	2	2
Females More Aggressive (N = 5)		
Gusii	8	9
Indians (Rajputs)	8	9
Trukese	8p	9p
Americans (U.S.A.)	5p	6p
Timbira, Eastern	2	4

[a] The numbers in parentheses indicate qualified, ambiguous, or doubtful codes. Numbers followed by a p indicate that the adults in the community have problems with the management of hostility and aggression.

Table 4

Percent of Studies Showing Greater Aggression in Each Sex by Methodology Employed

Group	Methodology							
	Observational	Rating	Experimental	Projective	Self Report	Fantasy Agression	Method Unclas.	All Methods[a]
Children	(21)[b]	(15)	(19)	(13)	(4)	(9)	(2)	(83)
Boys	76	80	63	54	75	78	100	71
Girls	0	6	0	15	25	11	0	6
No difference	23	13	37	31	0	11	0	23
Adults	(2)[b]	(2)	(18)	(9)	(11)	(0)	(4)	(46)
Men	0	50	50	89	55	0	50	57
Women	0	0	6	0	18	0	0	7
No difference	100	50	44	11	27	0	50	37

[a] The "All Methods" column (except for numbers in parentheses, described in b, below) refers to the percentage of studies, regardless of methodology employed, which show greater sex differences in boys (men), girls (women), or which show no sex differences in aggression.

[b] Numbers in parentheses refer to the number of studies employing each methodology, and to the summation of methodologies in the "All Methods" column.